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A NEW ALEURODES FOUND ON AQUILEGIA.

By T. D. A. COCKERELL.

Aleurodes aureocincta, sp. nov.

♂. Body about 1 mm. long, blackish, with some dull ochreous markings, a conspicuous yellow spot in front of base of wings. The body is very white-mealy, so as to appear grey. Legs yellowish grey, femora blackish, knees cream color. Hind femora extending as far as tip of abdomen; forewings about twice as long as body. Base of antenna very stout. Eyes completely divided. Wings snow white, with a suffused dusky spot at end of nervure, most obvious on anterior wings. Forewings with the main nervure apparently branched just as in *Aleurodicus*, but the seeming upper branch is only a fold, as may be seen on examination by transmitted light under a compound microscope. Lower branch of main nervure arising at extreme base, so that there are practically two nervures.

Pupa, a little over 1 mm. long, oval, dorsally black, with a very broad pale marginal area, which is pale lemon yellow in specimens which have given the imago; but white in others, probably parasitized, which have not hatched. The margin of the black area is dark brown. There is no fringe, but a dark line runs close to the margin, separating a narrow marginal area which looks like a very short fringe. On the dark portion of the pupa the segments are very distinctly marked; the light marginal portion is strongly but minutely corrugated all over, something like the skin of one's finger-tips under a lens; while margin is very finely striate and feebly scalloped. The vasiform orifice is approximately an isosceles triangle, with the angles rounded, the basal side straight, the caudad sides bulging. The operculum is rounded, much broader than long, somewhat less than the outline of a hemisphere; the lingua is broad and rounded at end, and projects beyond the operculum. The lingua and operculum together have much the outline of an English "cottage loaf" of bread, except that the operculum is too broad at base.

Habitat: On leaves of *Aquilegia*, Organ Mts., New Mexico (E. O. Wooton). It is severely parasitized by *Pteroptrix flavimedia* Howd. Mr. Howard (Revis. Aphelininæ, p. 19) in recording the parasite, leaves it to be inferred that the locality is Las Cruces; the *Aquilegia*, however, does not occur there.

A. aureocincta could not well be confused with any other North American species.

INTELLIGENCE SHOWN BY CATERPILLARS IN PLACING THEIR COCOONS.

By WM. T. DAVIS.

Usually the cocoons of the American silk-worm moth (*Telea polyphemus*), fall off with the leaves in autumn, or a few dangle from the trees by a thread or two, which the caterpillars have accidently ex-

tended beyond the petioles of the leaves. During the storms of winter most of these unsecurely supported cocoons are also broken loose and complete their descent to the ground. We have found in early August an American silk-worm cocoon attached to the side of a house, about five inches from the ground, and on the 10th of last January, Mr. Chas. W. Leng and I, while walking on the ice in a Staten Island swamp, discovered one firmly woven to a forked branch of a rose bush, that stood in the water. It was as well secured to the forked branch as a *Cecropia* cocoon would have been. Of course to have fallen off with the leaves would have resulted in the death of this particular *Polyphemus*, and we presume that it was in some way the realization of this fact that caused the caterpillar to attach the cocoon so securely.

On the bushes and small trees that grow in the water on the margin of Silver Lake, on Staten Island, we have found a *Luna* moth cocoon and also an *Angulifera* cocoon firmly attached to branches. It is the habit of both of these species to construct their cocoons on the ground, but not being able to do so in the cases cited they did the next very best thing possible.

The above are perhaps not quite as interesting cases of the care taken by caterpillars to preserve their cocoons and themselves as the one mentioned in the "Proceedings of the Natural Science Association" some years ago under the caption of "Woodpeckers and *Cecropia* Cocoons." As is well known, *Cecropia* caterpillars spin their cocoons in a variety of places, often on fences, sometimes at the base of elder bushes and sometimes at the ends of swaying branches, when the food-plant happens to be a tree. The cocoons spun near the ground are often devoured by mice that gnaw through the silken coats to the edible pupa within. Those placed on tree branches are more safe from the attacks of mice, but are liable to be eaten by woodpeckers. On the 14th of January, 1888, I saw a Downy Woodpecker investigating a *Cecropia* cocoon in a white maple, the woodpecker thrusting its bill in and pulling it out of the cocoon quite frequently. After a while it flew to another cocoon a few feet away, but it being on such a small branch it was unable to successfully pick it open as the branch swayed up and down. It was then plain what a great protection it was to the insects to place their cocoons near the branch ends, though no doubt they are sometimes killed by the swaying of these branches during a storm.

When the woodpecker was gone, I cut the cocoon off, and found a small hole in its side quite near the branch, where it was easiest to drill because the silken fabric gave way the least to the strokes of the bird.

Cutting open the other side of the cocoon, I found that the pupa shell was sucked nearly dry of its contents. The *Cecropia* cocoons occur commonly on white maples and are generally placed near the ends of the long drooping branches, and it will be seen from the foregoing that it is probably the safest situation afforded by the tree. If a woodpecker is successful in making a hole into a cocoon, it is, nevertheless, sometimes disappointed at its contents. I have found a cocoon that contained the tough pupa case of the *Ophion* ichneumon fly, that had been drilled in the side by a woodpecker, and then abandoned, leaving the parasite unharmed.

THE CLASSIFICATION OF THE SATURNIIDÆ.

BY A. RADCLIFFE GROTE, A. M.

The publication by Dr. Dyar* of a critical notice of my recent paper (June, 1896) † on the *Saturniides*, affords me, in replying, the opportunity of briefly stating the characters which I found in the group. I founded the two families into which the superfamily naturally divides (any other division being in my opinion unnatural) as follows:

Vein IV ₂ anastomosing with IV ₁	SATURNIIDÆ.
Vein IV ₂ out of the cross-vein	AGLIIDÆ.

Perhaps some reason should have been given by Dr. Dyar for calling this fundamental difference in the neururation "artificial," while contrasting it with a "natural classification which should combine several such special ones." But this combination does not exist; it remains ideal. It reminds one of the hazy statement, that we must take characters from all parts of the insect, which procedure, without a strict weighing of values, would lead us nowhere. But the fact is, that although I have taken the structure of the Radius as the principal character, determining as it does the dichotomous division of the superfamily, I have not left out of sight the characters of differentiation offered by the larvæ and cocoons. I have worked out the gradual modifications of the Radius in the highest of the two families. I have not "selected" a random or arbitrary character, which would in the end fail. I have been obliged to take the fundamental character which carries with it all

* Can. Ent. XXVIII, 270.

† Mittheilungen aus dem Roemer Museum zu Hildesheim, No. 6.